CLAIMS

What is claimed is:

1.   A method for calculating signal-to-interference ratio (SIR) of a mobile device in a wireless communication system, the method comprising the steps of:

5   non-coherently processing a communication signal transmitted by the mobile device;

estimating interference power of the communication signal;

scaling the estimated interference power;

subtracting the scaled estimated interference power from the processed communication signal to thereby estimate signal power; and

10   calculating the SIR by dividing the estimated signal power by the estimated interference power.

2.   The method of claim 1, wherein the step of non-coherently processing includes the steps of:

15   multiplying a portion of the communication signal by a pilot symbol sequence in each finger of a receiver to produce a respective multiplied signal;

calculating an average of the multiplied signal over a length of the pilot symbol sequence in each of the fingers of the receiver;

squaring the respective averages in the fingers of the receiver; and

20   adding the squares of the fingers of the receiver.

3.   The method of claim 1, wherein signal power is estimated based on pilot symbols and any one or more of TPC, TFCI, and FBI symbols.

4.   The method of claim 1, wherein the interference power is estimated based on pilot symbols and TPC symbols.

5   5.   The method of claim 1, wherein the step of estimating the interference power includes a step of calculating a difference between adjacent symbols.

6.   The method of claim 5, wherein the step of estimating the interference power includes a step of calculating a square of the difference between adjacent symbols.

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7.   The method of claim 5, wherein the step of estimating the interference power includes a step of high-pass filtering symbols.

8.   In a wireless communication system having a base station and a mobile device, a

15   method for adjusting power settings of the mobile device comprising the steps of:

calculating signal-to-interference ratio (SIR) of communication signals transmitted to the base station by the mobile device, the calculating step including:

non-coherently processing a communication signal transmitted by the mobile device;

20   estimating interference power of the communication signal;

scaling the estimated interference power;

subtracting the scaled estimated interference power from the processed communication signal to thereby estimate signal power; and

calculating the SIR by dividing the estimated signal power by the estimated

interference power;

comparing the calculated SIR with a target SIR to thereby generate a power control

signal;

5   transmitting the power control signal from the base station to the mobile phone; and

adjusting the power of the communication signals transmitted by the mobile phone based

on the power control signal.

9.   The system of claim 8, wherein signal power is estimated based on pilot symbols

10   and any one or more of TPC, TFCI, and FBI symbols.

10.   The system of claim 8, wherein the interference power is estimated based on pilot

symbols and TPC symbols.

15   11.   The system of claim 8, wherein the step of estimating the interference power

includes a step of calculating a difference between adjacent symbols.

12.   The system of claim 11, wherein the step of estimating the interference power

includes a step of calculating a square of the difference between adjacent symbols.

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13.   A system for calculating signal-to-interference ratio (SIR) comprising:

means for non-coherently processing a communication signal transmitted by the mobile

device;

means for estimating interference power of the communication signal;

means for scaling the estimated interference power;

means for subtracting the scaled estimated interference power from the processed communication signal to thereby estimate signal power; and

5   means for calculating the SIR by dividing the estimated signal power by the estimated interference power.

14.   The system of claim 13, wherein the means for non-coherently processing comprises:

10   means for multiplying a portion of the communication signal by a pilot symbol sequence in each finger of a receiver to produce a respective multiplied signal;

means for calculating an average of the multiplied signal over a length of the pilot symbol sequence in each of the fingers of the receiver;

means for squaring the respective averages in the fingers of the receiver; and

15   means for adding the squares of the fingers of the receiver.

15.   The system of claim 13, wherein signal power is estimated based on pilot symbols and any one or more of TPC, TFCI, and FBI symbols.

20   16.   The system of claim 13, wherein the interference power is estimated based on pilot symbols and TPC symbols.

17.   The system of claim 13, wherein the means for estimating the interference power is communicatively coupled with a means for calculating a difference between adjacent symbols.

18.   The system of claim 17, wherein the means for estimating the interference power is communicatively coupled with a means for calculating a square of the difference between adjacent symbols.

19.   A wireless communication system, having a base station and a mobile device, for providing power control of communication signals transmitted by the mobile device comprising:

means for calculating signal-to-interference ratio (SIR) of the communication signals transmitted to the base station by the mobile device, the calculating means comprising:

means for non-coherently processing a communication signal transmitted by the mobile device;

means for estimating interference power of the communication signal;

means for calculating a scaled estimated interference power;

means for subtracting the scaled estimated interference power from the processed communication signal to thereby estimate signal power; and

means for calculating the SIR by dividing the estimated signal power by the estimated interference power;

means for comparing the calculated SIR with a target SIR to thereby generate power control signals;

means for transmitting the power control signals from the base station to the mobile phone; and

means for adjusting power of the communication signals transmitted by the mobile phone based on the power control signals.

20. The system of claim 19, wherein signal power is estimated based on pilot symbols and any one or more of TPC, TFCI, and FBI symbols.

21. The system of claim 19, wherein the interference power is estimated based on pilot symbols and TPC symbols.

22. A wireless communication system having a base station and a mobile device, comprising:

a processor;

a memory communicatively coupled to the processor;

software executing in the processor configured to:

non-coherently process a communication signal transmitted by the mobile device;

store the processed communication signal in the memory;

estimate interference power of the communication signal;

store the estimated interference power in the memory;

scale the estimated interference power;

store the scaled estimated interference power;

subtract the scaled estimated interference power from the processed communication signal to thereby estimate signal power;

store the scaled estimated signal power in the memory; and

calculate the SIR by dividing the estimated signal power by the estimated

interference power.

23.   A wireless communication system having a base station and a mobile device,

5   comprising:

a processor;

a memory communicatively coupled to the processor;

software executing in the processor configured to:

non-coherently process a communication signal transmitted by the mobile device;

10   store the processed communication signal in the memory;

estimate interference power of the communication signal;

store the estimated interference power in the memory;

scale the estimated interference power;

store the scaled estimated interference power;

15   subtract the scaled estimated interference power from the processed

communication signal to thereby estimate signal power;

store the estimated signal power in the memory; and

calculate the SIR by dividing the estimated signal power by the estimated

interference power;

20   store the calculated SIR in the memory;

compare the calculated SIR with a target SIR, which is stored in the memory, to

thereby generate a power control signal;

transmit the power control signal from the base station to the mobile phone; and

adjust power of the communication signals transmitted by the mobile phone based on the power control signal.